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Two Indian stone hatchets, with grooves for holding handles, found in Somerset County, New Jersey.

Eight Indian stone arrow heads, of different forms.

A very perfect stone Indian celt, from Yona Mountain, in Georgia, C. S.

An ornamented bronze ring.

A brass celt, with an iron rivet on it, apparently a modern forgery.

A stone with differently shaped hollows on its surface, like moulds.

A modern spring spur, of a peculiar form.

Two large lateral circular brass buttons, with appendages like earrings, probably Indian ornaments.

A large clay tobacco pipe, with stand.

A small pipe of the kind commonly called Danish.

The thanks of the Academy were given to the donor.

MONDAY, MAY 9, 1864.

The VERY REV. CHARLES GRAVES, D. D., President, in the Chair.

Charles Philip Cotton, Esq., C. E., was elected a member of the Academy.

Professor Downing read a paper "On the recent Failure of the Bradford Reservoir, near Sheffield."

MONDAY, MAY 23, 1864.

The VERY REV. CHARLES GRAVES, D. D., President, in the Chair.

Mr. E. A. CONWELL read a paper—

ON ANCIENT REMAINS, HITHERTO UNDESCRIBED, IN THE COUNTY OF MEATH.

MY object in bringing this paper before the Academy is to direct the attention of antiquaries to a great field for observation which has hitherto passed unnoticed, and the thorough and systematic exploration of which will, I feel assured, do good service to the cause of antiquarian research.

In the extreme north-west angle of the county of Meath, about two miles south-east of the village of Oldcastle, and in the direction of the town of Kells, the hill of Sliabh-na-Caillighe, rising to the height of 904 feet, and being the only eminence in the county assuming the name or character of a mountain, makes a prominent feature in the landscape. It is forced out of the Lower Silurian rocks, which occupy a large extent of the country to the northwards, from Drumlish, in the county of Longford, to Donaghadee, in the county of Down, including the range of the Mourne Mountains.

The longest axis of Sliabh-na-Caillighe is from west to east, and its extent about two miles.

To the south and west of the hill lie the comparatively low, undulating, limestone plains of Meath and Westmeath, and on the north the slate rocks occupy the low grounds around Lough Ramor. In form the hill consists of three main peaks, two of these still crowned with large tumuli and smaller cairns; while on the third the work of demolition is going on even at the present time—Mr. Edward Rotheram, of Crossdrum, having had men engaged for years past in carting away the stones of a large tumulus, for the construction of adjoining fences. There are, besides the three principal peaks, two minor hills, extending from the middle in the direction of the western peak, each also crowned with the remains of ancient cairns.

The prospect from the summit of any of these peaks is not to be surpassed for pastoral beauty by any other locality in Ireland; and it would be impossible to select a more fitting and commanding site for the necropolis of a tribe than that which has been chosen—*on the very confines of Leinster and Ulster*—by the cairn and cromlech builders who inhabited the prairies of central Ireland.

For years these great cairns—composed of dry, loose stones, and the massive, rude, stone chambers which I am about to describe—have found no better interpretation in the eyes of the peasantry than what is contained in the local legend:—That “an old hag (name and date not given), with her apron filled with stones, jumped from one peak to another, scattering a few on each peak, and leaving her chair on the middle one.”

Some years since, passing in the neighbourhood, and observing from the plain one of these cairns, I inquired what it was; when I was at once informed that it was an erection on which the officers of the Ordnance Triangulation Survey had placed their flag. But it at once occurred to me that such immense piles of stones as I observed on the summits of the peaks of Sliabh-na-Caillighe could scarcely have been erected by the Ordnance Survey officers, as the labour and cost of making them would be more than commensurate with the advantage to be derived. I therefore examined the place; and although, during the first two attempts, I was driven from the mountain by storms of hail and rain, I persevered, and was gratified by the discoveries which I now lay before the Academy.

I may just mention, that, on consulting the Ordnance Survey Townland Maps, I find that the only notice taken of these very interesting remains of antiquity is indicated by a mere dot or two, with the words “stones” appended; and this may have caused the place to be passed by and neglected, even by such accurate observers as Sir W. R. Wilde, who must have been looking at these cairns, from no great distance, when he commenced to write his graphic description of the Blackwater, where it issues from Lough Ramor.

I only trust that future explorations may turn up some curious details for an additional chapter in the next edition of that interesting book.

My friend, Mr. Du Noyer, to whose quick and accurate pencil this Academy owes so much, but for whose contributions posterity will yet feel a still deeper debt of gratitude,—inasmuch as he has recorded the present appearances of many places and objects of great interest, fast disappearing,—accompanied me on a hurried visit to the place; and I have to thank him for the field plans and the enlarged sketches of the sepulchral chambers, accurately drawn from measurements, according to the scales appended to each, now before the Academy. On the 16th and 30th of April last, I visited the place, and took rubbings of four engraved stones found in the chambers of cairns already laid open, the curious devices on which I have the honour to submit to the judgment of the Academy.

Commencing on the western peak, I have adopted letters, on the general plan, to denote the cairns.

- A—Is twenty-seven paces in circumference, and sixty-three from D. Nearly all the stones which formed this cairn have been removed. Four large stones still remain, standing on the circumference of the base.
- B—Is twenty-four feet in diameter, and thirty-eight yards from D. The upper portion of the structure has been removed, laying bare in the centre a long chamber, formed of large flagstones, laid on edge, and pointing in the direction of E.  $20^{\circ}$  S.
- C—Is also about twenty-seven paces round the base, and thirty-five from D. Nearly all the stones have been taken away from the margin and the interior, leaving four large stones standing in the centre.
- D—Is entirely composed of dry small stones. The original circle of fifty-four large stones round the base is still perfect, and is 182 yards in circumference. The height of the cairn, in its present state, is about twenty-eight yards from base to summit. The interior of this, the largest of all the tumuli, has yet to be explored. The north and east sides have been left untouched; but on the south and west, for nearly 100 yards round the base, the stones have been almost entirely taken away, extending to a distance of twenty-four yards from the circumference towards the centre. A curve inwards in the circumference of twelve paces in length, indicating the entrance (as shown in those cairns whose chambers now lie exposed), has the direction of E.  $20^{\circ}$  S.
- E—This cairn has been nearly altogether cleared away; about half a dozen of the large stones, apparently used in forming the chambers, still remain. The diameter of the base of the cairn is twenty-one feet.
- F—Is about fourteen yards from E, and is fifty feet in diameter; the upper portion removed, leaving exposed the long chamber which formed the grave.

- G—Is fifty-four feet in diameter, and forty-three yards from D. Eight large stones remain in the margin, but the upper portion of the pile is gone, leaving exposed in the interior a long grave, having the direction of E.  $10^{\circ}$  N. Its distance from F is only one yard.
- H—Is forty-nine feet in diameter, and is forty yards from I. The long chamber in the centre of this is also exposed.
- I—This is the most curious and perfect of all those whose interior chambers now lie partially open. It is forty-two yards from L, and has eight large stones round the base. The direction of the entrance is due east. The interior is circular, as represented in Diagram I., thirteen feet in diameter, and is divided into seven niches by flagstones standing out like radii of a circle; depth not ascertained, as the place would first require to be cleared out. The passage leading in is eight feet six inches in length, and four feet six inches wide, having a stone, nine feet in length, lying opposite to it, and forming part of the circumference of the cairn, which is fifty-five feet in diameter. The terminal supporting stone of the passage on the right hand is in form a rude prism of three sides, standing about four feet high, the face hollowed, and beautifully inscribed with stars, &c., as seen in rubbing.
- J—Is thirty-eight feet in diameter, and only four yards from L. Twelve of the large stones which formed its margin still remain. It has been considerably excavated from the top downwards.
- K—Is seven yards from L, and forty-two feet in diameter. Thirteen of the marginal stones still remain, and the interior is excavated in top, as in J.
- L—Is 136 yards in circumference, surrounded by forty-two large stones, laid lengthwise on their edges. Great quantities of the stones have been removed, but the interior has evidently yet to be laid open. A curve inwards in the circumference, of twenty yards in length, indicates the entrance, which has a direction of E.  $20^{\circ}$  S. The distance from L to D, the two largest cairns, is 185 yards.

We pass from the western summit; and at the base of the first knoll, before ascending the middle peak, and at the head of a beautiful sloping valley, with several large stones in a line, as if indicating the course of the burial procession as it advanced from the plains, are the remains of three stone circles, close together—fifteen, twenty-two, and twenty-five paces in diameter, respectively,—and evidently the bases of three cairns, whose stones have been found ready at hand for the construction of adjoining walls. Several of the large stones in the circumference have been recently broken up, and carried away.

M—Crowning the first knoll are the remains of a cairn, twenty yards in diameter, at present only about four feet high, and without the usual boundary ring of large stones.

N—On the top of the second knoll are the remains of a cairn, twenty-

two yards in diameter, with four large stones standing outside, and marking a passage, pointing due east, of sixteen yards long, seven yards wide at the entrance, and diminishing to four yards as it approaches the cairn.

O—In the valley, below the two knolls, are the remains of a cairn, nine and a half yards in diameter. One upright stone, inscribed with circular hollows, stands in the interior.

P and Q—Are the remains of two cairns, each about seven yards in diameter, placed close together, on the side of the central peak.

R—Is forty-two yards from T; its present remains are only about two feet high, thirty-eight paces round, and contain an exposed circular chamber in the centre, seven feet in diameter.

S—Is seven yards from T; diameter thirty-three feet six inches, and is surrounded by thirty-six large stones placed on their ends. A chamber of six feet long, and four feet wide, lies open in the centre. On the top of one of the marginal stones, about five feet high, a rude cross has been carved,  $8 \times 8$  inches, which tradition in the locality asserts was the work of the men engaged in the Ordnance Survey, as well as the cross 9 inches high by 8 inches broad, carved on the centre of the seat of "The Hag's Chair."

T—Though not the largest of all the cairns, is the one of greatest magnitude on the central summit, and, from its position, is the most conspicuous, at a distance, of all the cairns. No attempt has yet been made to open or deface this noble monument. It is 126 yards in circumference, twenty-one yards from base to summit, and is surrounded by thirty-seven stones, laid on edge, and varying in length from six to twelve feet. The length of the curve indicating the entrance is seventeen yards. Exactly facing the north, and set about four feet inwards from the circumference, is a stone, nine feet long, three feet high, and two feet thick, having a rude seat hollowed out of the centre. The ends are elevated nine inches above the seat, and the back appears to have fallen away. This is called "The Hag's Chair."

U—Is about seventeen yards from T, and is forty-nine yards in circumference. There are sixteen large stones still in the base; and nearly two feet inside the circumference, a stone, seven feet long, lies facing the entrance. The upper portion of the cairn has been entirely removed, exposing four chambers, accurately represented in Diagram No. 2 A. The direction of the passage to these chambers points E.  $30^\circ$  S. The chambers are formed of rude flagstones, set upon their edges, and when I visited the place were filled up with small stones. These I cleared away, in order to get rubbings of the upright stones. I did not clear the entire chambers; but, after the small stones had been removed round the bases of the upright stones; I had to dig through about eight inches deep of earth, thickly mixed with charred bones, most of them broken into small splinters. I submit some specimens, together with the curious rubbings of the stones alluded to. On the

narrow horizontal face of the northern stone, which slopes downwards, and in an eastern direction, is a serpentine engraving, which I have taken separately, as well as in conjunction with the engravings on the face of the same stone.

V—Is thirty-eight yards from T, and about as many in circumference.

The large stones forming the chambers of this cairn are laid quite bare, and present the appearance in Diagram No. 2 C. About a yard outside the circumference, on the north-western side, stands an upright pillar stone, five feet above ground, six feet broad, and one foot thick. Digging at the base of this, in a fruitless search for engravings, I turned up the long, rounded, white pebble which I submit, and which may have been used as a sling stone, or a hammer.

W—Is represented in Diagram No. 2 B, and is at present nearly level with the ground. It is about fifteen feet in diameter, and 120 yards from T. In the centre, a very curious, well-like chamber, six feet six inches in diameter, is laid bare to the depth of four feet, and is formed by seven flags, placed on ends, fitting closely together, except in two instances, and all having an inclination inwards at the bottom. An eighth stone now stands a little inwards, but this has evidently been misplaced from the close-fitting boundary.

X—Passing from the middle, and midway up the eastern peak, are found, close together, the remains of three stone circles. One of these circles, consisting of nine stones, and one about the centre of the inclosure, is still perfect. The second circle has now remaining only seven stones in its circumference, with two flat stones inside the inclosure. On the face of the largest of these two stones, and about the middle of it, is cut, with perfect precision, to the depth of three inches, a circular hole, six and a half inches in diameter. The third circle is more imperfect than the second, containing in its present circumference only six stones.

Y—Has been 101 paces in circumference. Nearly the entire of this once very conspicuous cairn, as it crowned the peak, has been taken away by Mr. Rotheram, and used up in building the adjoining fences. A few cart loads of the stones only now remain.

Z—At the base of the eastern peak, on the south side, stands the Moat of Patrickstown. It measures 115 paces round the base, forty-five feet in slant height, and forty paces round the circumference at the top, which is flattened. This tumulus is situated on the top of a small sloping eminence, in a green field, and is crowned by a mutilated whitethorn tree, growing on the eastern border. It is covered with earth and grass; but is said to consist of stone chambers in the interior.

I have now exhausted the alphabet, and, I fear, your patience; but not by any means the subject. A short distance south of the Moat of Patrickstown, in what is now called the townland of Thomastown, have stood, until the spring of this year, twenty-one tumuli, each from six to

ten feet high, and ranging from fourteen to thirty paces in circumference, about ten yards distant from one another, on an average, and grouped in a circle. They have been constructed of stones in the centre, covered by about two feet of earth. Fourteen of these only now remain, the others having been torn up for the sake of the stones they contained, and have been used in the construction of an adjoining new fence, running through the sites of some of them, by Mr. W. Stowell Garnet, the owner of the soil. This piece of wanton destruction is much to be regretted, as nothing could be more picturesque than the position of these tumuli, on elevated ground, gradually sloping down to the centre of the circle formed by them, and ending in a round pool of water, sixty paces in circumference. Looking from this spot, are to be seen in every direction numerous raths.

About a mile and a half from Sliabh-na-Caillighe, on the north, stands an engraved stone (see Rubbing 5), in the middle of a large pasture field. The elevation on which it stands is called the King's Mountain; and there is a tradition in the locality that a king was buried under the stone. Being at present used as a rubbing stone for cattle, it could not be expected that the stone should still preserve its original completeness—some pieces are broken off its sides and top. It is seven feet six inches high, three feet broad, and about six inches thick. On its present site, up to a few years ago, stood a tumulus, which the proprietor of the field caused to be carried away for top-dressing. In the centre of the mound was found a chamber filled with bones, and constructed of smaller engraved flagstones, supporting the present upright stone. It is not known what has become of the other carved stones.

The large moats of Diamor, Balgree, Dervor, and Girley are not far distant.

There are also several ancient caves in the immediate neighbourhood. Not far from the base of the eastern peak is that of Belview. The width of the passage at the entrance (see Diagram) is three feet five inches, the height four feet four inches, and the length forty-four feet six inches. The cave then widens out in the form of a circle, whose diameter is thirteen feet ten inches; height of the wall, eight feet up to where the beehive-shaped arched roof commences,—all formed of dry stones, without any cement, and terminating with a large flag on top.

Near the base of the western peak is a still more remarkable double cave (see Diagram). It was discovered about 1824, in the garden belonging to Loughcrew House, by a labourer who was trenching the ground, and came upon one of the large flags on top. The entrance is seven feet below the entrance of the garden, and the common passage from the entrance to the place where it branches right and left is forty-seven yards long, from three to four and a half feet high, and has a slope of two and a half feet for the first nineteen yards; it then rises abruptly two and a half feet, and has a slope of two and a half feet to the end. The continued passage then branches right and left; that on the right being four feet broad, from three and a half to four feet high, with a slope upwards of two and a half feet for ten feet in length, until it



turns into a similar passage, fourteen feet long, having a slope or elevation of four feet, and then enters a circular beehive-like chamber, fifteen feet in diameter, eight feet the perpendicular height of walls, and twelve feet in the centre of the cave.

The passage leading to the cave on the left of the common entrance is fifty feet long, goes down on a slope of five feet, is five feet wide, and from two feet nine inches to five and a half feet high. The diameter of the circular cave then entered is twenty feet; perpendicular height of walls, ten feet, and height in the centre of the chamber fourteen feet.

Two similar caves, one on each side of the public road, are to be found near Ballinlough chapel, and one at Balgree.

A little further on, at Clonsilla, are the remnants of three stone cairns, out of which I have been sent some bones, which I submit.

It is very probable that the cairns briefly described form but a very small portion of the number that were once here. The miles upon miles of stone walls, dividing the pasture lands adjoining, bear patent testimony to the use which has been made of these great collections of stones. Even in the lowest part of the valley, between the western and middle peaks, the remains of one (O) are still visible, evidencing the great probability that not only the sides, but even the valleys between the peaks, have been once thickly studded with cairns, similar to those which still remain. I attribute the better state of preservation of those which remain on the western peak to the greater difficulty of removing the stones, owing to the precipitous character of the hill.

Our President has already brought under observation the fact of the raths in Ireland being found running in groups of three. On the western peak, where the cairns are most perfect, there is a striking analogy.

Perhaps the most unique feature in all the cairns of magnitude on Sliabh-na-Caillighe is, that the *entrances* to the interior are *distinctly marked* by a curving inwards of the basement circle of large stones; while at New Grange the entrance would appear to have been carefully concealed, as its discovery is said to be the result of mere accident; and the bearing of these entrances, indicating as it were the very period of the year when the burial took place, at least the first one—for the many chambers would seem to imply that each was intended for a distinct individual.

In submitting the foregoing particulars, I would urge that some steps be taken to have these very interesting remains preserved from further destruction; and that a systematic and careful exploration of this wonderful place should be undertaken by the Academy, asking the co-operation and assistance of the lord of the soil, J. W. L. Naper, Esq., D. L., Loughcrew, whose beautiful residence these interesting relics of antiquity overhang; and whose character for wealth, kindheartedness, and a wish to promote every good object, is well known in the county.

I think, too, that an application should be made to the Ordnance Department to have the entire locality, so fully dotted over with remnants of antiquarian interest, resurveyed, correcting the meagre details they have already supplied and published, and giving on a large scale

an accurate mapping of the surrounding neighbourhood, at the same time supplying full particulars.\*

A discussion having taken place relating to the locality of the ancient remains described by Mr. Conwell, it was—

RESOLVED,—That it be recommended to the Council to make an application to Government to have the hitherto undescribed monuments near Oldcastle surveyed, measured, and mapped.

The Rev. SAMUEL HAUGHTON, M. D., Fellow of Trinity College, Dublin, read the following paper :—

#### NOTES ON ANIMAL MECHANICS.

##### NO. III.—ON THE MUSCULAR MECHANISM OF THE LEG OF THE OSTRICH.

ON the occasion of the death of a fine male Ostrich, during the month of January last, in the Zoological Gardens of this city, I secured the body for dissection in Trinity College, and requested Mr. Macalister, of the Royal College of Surgeons, to avail himself of the opportunity thus afforded of completing the anatomical investigations he had previously commenced in the Royal Dublin Society, by the dissection of a female Ostrich, in the summer of 1863. Mr. Macalister availed himself of the opportunity, and has laid before the Academy such results of his dissections as seemed to him most worthy of record. My own attention was directed especially to the investigation of the muscular mechanism of the leg of the Ostrich, which I have long regarded as one of the most interesting pieces of mechanism in the animal kingdom, and I was fortunate enough to discover, in the digastric *rectus femoris* muscle, what I believe to be the key to the explanation of the complicated muscular apparatus of the Ostrich's leg.

The leg of the Ostrich is to be regarded as a long rod bent at four distinct points, which attains its greatest amount of shortening or bending at the moment the foot touches the ground, and which is suddenly straightened or elongated by the simultaneous contraction of all the muscles. The effect of the sudden elongation of the leg is, to throw the whole body of the bird forward, as if from a catapult, from the point of support of the foot; and while the body of the animal is thus projected through the air, the antagonist muscles that flex the several joints come into play, and are assisted in their action by some very remarkable contrivances in the heel joint, which I shall describe and figure.

It is necessary to the perfection of the mechanism, that the greatest possible amount of muscular force shall be expended in straightening or unbending the legs, alternately projecting the animal from foot to foot along the ground, the leg being at its maximum of flexure at the moment of touching the ground, and at its maximum of elongation at

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\* The references in the above paper are to drawings preserved in the Library of the Royal Irish Academy.—ED.